V. Office and Industrial Uses

This chapter describes the baseline market conditions facing office and industrial uses in the City of Fremont (City) and identifies potential future growth industries and citywide space and land needs to accommodate this growth. It also considers Warm Springs in the context of the potential overall demand and competitive locations and provides initial conclusions concerning the opportunities and constraints for office and industrial uses within the South Fremont/Warm Springs area. For the purposes of this analysis, industrial uses are defined as including R&D flex space, manufacturing space, and warehouse and distribution space. As well as being integrated into a number of the industrial uses, stand-alone office space is also evaluated separately. Subsequent stages of the overall South Fremont/Warm Spring Study effort, including the White Paper and Expert Panel, will add to and potentially refine the initial market indication described in this chapter.

Economic Context

This section provides an overview of the economic context of the City of Fremont. It includes a description of the regional economy, including the I-80/880 Corridor, Silicon Valley, and the City of Fremont. It also highlights some of the City's core assets heading into the future, including the driving industries most likely to generate future industrial job growth in the City.

Regional Economy

The San Francisco Bay Area economy provides 3.5 million jobs with major job centers located in Silicon Valley, the City of San Francisco, the I-80/880 Corridor, the Tri-Valley, and areas in the North Bay. Economic growth and technological change have driven the demand for workplace development, including office, warehouse, manufacturing, and R&D Flex space in these job centers.

Interstate 80/880 Corridor

Fremont's local economy is tied to the economic trends along Silicon Valley and the I-80/880 Corridor. The I-80/880 Corridor is one of the largest employment centers in the East Bay, accounting for approximately 528,000 jobs, or 15 percent of the Bay Area total (see **Table 11**). Running north-south along the western edge of the East Bay, the I-80/880 Corridor traverses the western edge of Contra Costa County and Alameda County. This report focuses on the central and southern portions of the I-80/880 Corridor and defines the I-80/880 Corridor for this report as including the cities of Berkeley, Emeryville, Oakland, San Leandro, Hayward, Union City, Newark, and Fremont.

Table 11: Bay Area Employment Comparison 2010: Number of Jobs

Industry	I-80/880 Corridor	Silicon Valley	Other Bay Area	Bay Area
Manuf, Wholesale & Trans.	143,240	346,860	227,080	717,180
Retail	51,820	117,460	178,120	347,400
Financial & Prof. Service	90,340	256,350	420,170	766,860
Health, Ed. & Rec. Service	172,980	362,940	584,780	1,120,700
Other (1)	70,310	162,580	266,290	499,180
Total (2)	528,690	1,246,190	1,676,440	3,451,320
% of Total	15%	36%	49%	100%

(1) Includes Information, Construction, and Public Administration.
(2) Excludes Agriculture and Natural Resources Categories.

Source: ABAG Projections 2009; Economic & Planning Systems, Inc.

About 27 percent of the employment along the I-80/880 Corridor, or 143,000 jobs, falls under the manufacturing, wholesale, and transportation category, the job category containing the most industrial jobs. This is similar to the proportion in Silicon Valley, but significantly higher than the average of 20.8 percent in the Bay Area overall. The level of industrial employment along the I-80/880 Corridor is tied to the history of the area and the associated advantages of proximity to the Port of Oakland and other regional transportation infrastructure. The Corridor accounts for 20 percent of the total manufacturing, wholesale, and transportation jobs in the Bay Area (see **Table 12**). Employment composition along the I-80/880 Corridor in each City is summarized in **Tables 13, 14,** and **15**.

Silicon Valley

Silicon Valley is located in the southern part of the San Francisco Bay Area with its core represented by Santa Clara County and San Mateo County, the definition used in this analysis. However, the strong economic connections and expanding reach have, more recently, resulted in more expansive definitions, including the southern Alameda County cities of Fremont, Newark, and Union City, as well as the Santa Cruz County community of Scotts Valley.

The defining characteristics of Silicon Valley are its interrelated industries and economic activities that have created a region recognized worldwide as a leader in technological innovation and progressive corporate culture. Silicon Valley is home to the headquarters of numerous internationally prominent information technology companies such as IBM, Cisco, Apple, Hewlett Packard, Google, Facebook, and Intel and Fremont-based companies like Lam Research, and Logitech. In addition, the region is home to many more small and/or start-up firms that are equally responsible for the region's reputation. Silicon Valley includes 1.25 million jobs, 36 percent of the Bay Area total (see **Table 11**). Similar to the I-80/880 Corridor, Silicon Valley has a high concentration of manufacturing, wholesale, and transportation jobs, especially in Santa Clara County.

Table 12: Bay Area Employment Comparison 2010: Percentage of Total Jobs

Industry	I-80/880 Corridor	Silicon Valley	Other Bay Area	Bay Area
Manuf, Wholesale & Trans.	20.0%	48.4%	31.7%	100.0%
Retail	14.9%	33.8%	51.3%	100.0%
Financial & Prof. Service	11.8%	33.4%	54.8%	100.0%
Health, Ed. & Rec. Service	15.4%	32.4%	52.2%	100.0%
Other (1)	14.1%	32.6%	53.3%	100.0%
Total (2)	15.3%	36.1%	48.6%	100.0%

(1) Includes Information, Construction, and Public Administration.
(2) Excludes Agriculture and Natural Resources Categories.

Source: ABAG Projections 2009; Economic & Planning Systems, Inc.

The history of economic growth in Silicon Valley is closely tied to Stanford University and other Bay Area educational institutions as well as the linkages between academic and federal research and industry. Silicon Valley has been at the forefront of a number of the most significant innovation waves since 1950, including the semiconductor industry, the personal computer industry, the internet industry, and the biotech industry. It is also at the forefront of the emerging green/clean tech industry and the ongoing convergence of the biotech, nanotech, and infotech fields.

Fremont

The City of Fremont is located in the southern portion of the I-80/880 Corridor adjacent to the smaller cities of Newark and Union City as well as the City of Milpitas in Santa Clara County, and across the Dumbarton Bridge from the City of Palo Alto. Historically, its economic growth and contractions were primarily related to the economic performance of I-80/880's industrial base. However, much of the new economic growth in the City since 1990 has been tied to the economic performance of Silicon Valley and has related to established and emerging technology sectors.

Table 13
I-80/880 Corridor Employment Comparison 2010: Number of Jobs
South Fremont/Warm Springs Area Study; EPS#20050

Industry	Oakland	Emeryville	San Leandro	Berkeley	Hayward	Union City	Newark	Fremont	I-80/880 Corridor Total
Manuf, Wholesale & Trans.	40,490	3,690	13,730	6,270	25,270	7,740	7,270	38,780	143,240
Retail	11,960	2,720	6,690	6,210	8,570	2,150	4,310	9,210	51,820
Financial & Prof. Service	35,960	3,670	6,680	14,260	9,030	2,180	2,270	16,290	90,340
Health, Ed. & Rec. Service	65,650	2,690	10,180	40,880	20,380	5,860	4,670	22,670	172,980
Other (1)	34,250	3,630	3,540	8,510	8,940	2,240	1,780	7,420	70,310
Total (2)	188,310	16,400	40,820	76,130	72,190	20,170	20,300	94,370	528,690
% of Total	35.6%	3.1%	7.7%	14.4%	13.7%	3.8%	3.8%	17.8%	100%

(1) Includes Information, Construction, and Public Administration.
(2) Excludes Agriculture and Natural Resources Categories.

Source: ABAG Projections 2009; Economic & Planning Systems, Inc.

Table 14
I-80/880 Corridor Employment Comparison 2010: Job Distribution by City
South Fremont/Warm Springs Area Study; EPS#20050

Industry	Oakland	Emeryville	San Leandro	Berkeley	Hayward	Union City	Newark	Fremont	I-80/880 Corridor Total
Manuf, Wholesale & Trans.	28.3%	2.6%	9.6%	4.4%	17.6%	5.4%	5.1%	27.1%	100.0%
Retail	23.1%	5.2%	12.9%	12.0%	16.5%	4.1%	8.3%	17.8%	100.0%
Financial & Prof. Service	39.8%	4.1%	7.4%	15.8%	10.0%	2.4%	2.5%	18.0%	100.0%
Health, Ed. & Rec. Service	38.0%	1.6%	5.9%	23.6%	11.8%	3.4%	2.7%	13.1%	100.0%
Other (1)	48.7%	5.2%	5.0%	12.1%	12.7%	3.2%	2.5%	10.6%	100.0%
Total (2)	35.6%	3.1%	7.7%	14.4%	13.7%	3.8%	3.8%	17.8%	100.0%

(1) Includes Information, Construction, and Public Administration.

(2) Excludes Agriculture and Natural Resources Categories.

Source: ABAG Projections 2009; Economic & Planning Systems, Inc.

Table 15
I-80/880 Corridor Employment Comparison 2010: Job Distribution by Industry
South Fremont/Warm Springs Area Study; EPS#20050

Industry	Oakland	Emeryville	San Leandro	Berkeley	Hayward	Union City	Newark	Fremont
Manuf, Wholesale & Trans.	22%	23%	34%	8%	35%	38%	36%	41%
Retail	6%	17%	16%	8%	12%	11%	21%	10%
Financial & Prof. Service	19%	22%	16%	19%	13%	11%	11%	17%
Health, Ed. & Rec. Service	35%	16%	25%	54%	28%	29%	23%	24%
Other (1)	18%	22%	9%	11%	12%	11%	9%	8%
Total (2)	100%	100%	100%	100%	100%	100%	100%	100%

(1) Includes Information, Construction, and Public Administration.
(2) Excludes Agriculture and Natural Resources Categories.

Source: ABAG Projections 2009; Economic & Planning Systems, Inc.

More than 94,000 jobs are located in Fremont, accounting for 18 percent of total Corridor employment. Fremont's economy has historically been linked to traditional industrial and distribution uses, though technology-related industrial uses have become an increasing part of its employment base over the last twenty years. Over 40 percent of the jobs, about 39,000 jobs, are in manufacturing, wholesale, and transportation, with other significant employment in the health, education, and recreation services, and financial and professional service categories (see **Table 16**). Fremont accounts for about one in four of the manufacturing, wholesale, and transportation jobs along the corridor.

Table 16: Fremont 2010 Demographic and Economic Summary

Item	#	%
Population	214,089	
Households	71,004	
Employed Residents	104,270	
Jobs		
Ag & Natural Resources	70	0%
Manuf, Wholesale & Trans.	38,780	41%
Retail	9,210	10%
Financial & Prof. Service	16,290	17%
Health, Ed. & Rec. Service	22,670	24%
Other (1)	7,420	8%
Total	94,440	100%

(1) Includes Information, Construction, and Public Administration.

Sources: U.S. Census Bureau, 2010; ABAG Projections, 2009; Economic & Planning Systems, Inc.

While much of Fremont's existing development occurred before 1990, the rapidly expanding Silicon Valley economy of the 1990s pushed its geographic boundaries outward. Between 1995 and 2000, Fremont added 33,000 jobs, equivalent to about 12 percent of the Santa Clara and San Mateo County job growth over the same period. New industrial job growth in Fremont since 1990 has increasingly been driven by technology sectors, including the communications and computer manufacturing sector, the biotech sector, and, more recently, the clean tech sector.

The downturn of the early 2000s had a significant impact on Fremont, in part because of its increasing focus on technology companies. The City has, however, continued to maintain a diverse industrial base over the last decade, providing a stable environment for ongoing operations, opportunities for expansion, and attractive opportunities for new firms, including a number of publicly and privately supported clean tech firms over the two to three years.

The current distribution of jobs in the City of Fremont is most similar to the neighboring cities like Union City and Newark. Fremont's employment has a higher concentration of industrial employment and a lower concentration of financial and professional services, and health, education, and recreational services compared to Silicon Valley's employment distribution.

Fremont's Key Assets

The competition for industrial jobs is strong, with competition from overseas, other lower cost of business States, other regions in California, and other cities in the Bay Area. Like Fremont, many cities are seeking to balance the competing demands for land from residential, retail, office, and industrial uses, while expanding their economic base and improving their fiscal situation. The City of Fremont will need to build off its existing strengths if it wishes to maintain and grow its diverse economic base. More specifically, the City will need to identify its place in the global competition for industrial jobs and protect its core assets. For firms considering locating in the San Francisco Bay Area, the City offers the following key assets.

Location

Fremont is located to the east of the San Francisco Peninsula, north and east of parts to Silicon Valley, and at the southern edge of the I-80/880 Corridor. The City is served by Bay Area Rapid Transit, providing access throughout the East Bay and to San Francisco and the Peninsula. Fremont's central Bay Area location provides good accessibility for logistics and distribution businesses and provides easy access to the City of Fremont for the labor force from the Silicon Valley, Peninsula, and bedroom Tri-Valley communities.

Fremont is located within 18 miles of the Lawrence Livermore National Laboratory and Sandia National Laboratory. These institutions are science and engineering-oriented technology innovation hubs that conduct significant R&D efforts. In addition, Fremont is close to the Bay Area's universities, including Stanford, Berkeley, and San Jose State. The 20,000-student Ohlone College is located in Fremont and offers three biotech certificates. Fremont is also centrally located between the three largest airports in the Bay Area, enabling easy national and international access. These airports are San Francisco International to the west, Oakland International to the north, and San Jose International to the south. Fremont is also close to the Port of Oakland.

Vacant Land

Although Fremont has developed the majority of its developable land like many surrounding cities, tracts of vacant land still exist. With a total area of 92 square miles, Fremont has been a desirable destination for companies seeking larger plots of land and developers seeking to use these opportunities. The government has also earned a reputation as business-friendly and helpful in its assistance of development and promoting economic growth. As the City continues to evolve, it will become increasingly important to protect compatible uses and direct future growth effectively.

Land Values and Lease Rates

Historically, Fremont's land values have been more in line with the other cities along the I-80/880 Corridor and below those of Silicon Valley and the Peninsula. As a result, Fremont has been a sought-after destination for residents and businesses seeking affordable land or building space.

Skilled Labor Force

Fremont's educated and diverse labor force helps to maintain the City's competitive edge. As illustrated in **Table 17**, more than 43 percent of the population has at least a bachelor's degree, 65 percent above the State average. The City also has an entrepreneurial culture, with a significant number of small home-based businesses operating in the City.

Table 17: Fremont's Population and Educational Attainment (2010)

Item	Fremont		California	
	#	%	#	%
High School Degree or Below	38,767	28.5%	9,231,195	43.3%
Some College/Associate Degree	38,679	28.4%	6,397,739	30.0%
Bachelor's Degree	36,068	26.5%	3,640,157	17.1%
Master's Degree	17,426	12.8%	1,287,844	6.0%
Doctorate Degree	5,302	3.9%	741,965	3.5%
Total	136,242	100.0%	21,298,900	100.0%
Unemployment	4,135	3.9%	1,235,679	7.0%

Sources: Claritas, Economic & Planning Systems, Inc.

Existing Industries

Fremont's skilled labor force has allowed the City to attract a broad range of industries. Major industries in Fremont include biotech, high tech, and a range of other firms that chose to locate research, assembly, and production facilities. The City of Fremont has been home to the facilities of some of the largest companies in the Bay Area, including Lam Research, Boston Scientific, 3ParData, and, ASI Corp. It also includes a number of prominent clean tech firms, including Solyndra, Deeya Energy, and Tesla. The large base of Fremont's existing industries presents expansion opportunities and additional appeal to attract new tenants.

Quality of Life

Fremont ranks high for its schools, "family-friendliness," and historic neighborhoods. The City's well-tended large parks system includes Lake Elizabeth in Central Park. Fremont includes a range of housing types appropriate for various income levels, ranging from executive housing to more affordable housing options.

Fremont's Driving Industries

Driving clusters are defined as concentrations of industries that have at least two of the following characteristics: high location quotient indicative of specialization,[4] high growth, or high employment indicative of industries that provide a sizable number of jobs. Driving cluster sectors are those that go beyond providing goods and services locally, such as retail and government services. A 2008 analysis by ICF explored the scale, recent growth rates, and concentrations of employment in driving industry clusters in the City of Fremont. This analysis provided strong indications of the clusters with the potential to lead job growth in the City. The findings of the analysis have been modified slightly to reflect some of the changes over the last two years. This section summarizes the key findings of the analysis.

Driving Industry Clusters and Recent Growth

Fremont's key driving clusters include:

- Biotechnology/Biomedical
- Clean Technology
- Computer and Communications Hardware
- Distribution and Logistics
- Diversified Industrial Support
- Software and Communications Technology
- Health Services
- Professional Services

With the exception of professional and health services, the large majority of jobs in each of these clusters are concentrated in the core industrial areas that include Ardenwood, Baylands, and Warm Springs. Professional and health services are concentrated in the City Center and other non-core industrial areas.

The City experienced growth in a number of its industry clusters before the current downturn. The ICF analysis identified strong job growth in all the City's driving industries with the exception of diversified industrial support (traditional manufacturing) and software and communications technology.

Growth rates were very strong in computer and communications manufacturing, professional services, and clean tech and strong in distribution and logistics and health services. The biotechnology sector also grew though was recently set back by the departure of some of the City's large biotech tenants.

Future Growth Prospects

For the core industrial areas, the computer and communications hardware manufacturing, biotechnology, clean technology, and distribution and logistics clusters have the strongest growth prospects. These clusters are all driving industries, have an existing presence, and have shown

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[4] If a location has a specialization in a certain industry then it is likely that they are exporting—serving beyond the local demand and therefore the industry is bringing in outside money to the local economy.

strong recent growth. The concentration of these clusters by subarea is presented in **Table 18** and described below.

- **Computer/Communications Manufacturing**. Fremont's computer and communications manufacturing cluster includes technology-related, generally high-value added manufacturing that supports the Bay Area's information technology and electronics industry. This cluster, as of 2007, provided about 26,000 jobs in Fremont, the most of all the driving clusters. It is dominated by the communications equipment manufacturing and semiconductor and electronic component manufacturing sectors. Several of the firms in this cluster are headquartered in Fremont, such as Lam Research and Logitech.

- **Distribution and Logistics**. The distribution and logistics cluster is composed of businesses that either directly engage in or facilitate the transportation or warehousing of products, including the scheduled air transportation, railroads, freight trucking, and warehousing industries. This cluster represents a significant source of employment in Fremont, at about 13,000 employees. This cluster, concentrated in Fremont and other East Bay communities, supports not only local but also far-reaching Bay Area-wide clusters. Fremont's cluster has three times the concentration of employment relative to the State average.

- **Biotechnology/Biomedical**. Fremont's biotechnology/biomedical cluster includes a number of industry sectors related to the life-sciences industry with a primary focus on medical instrument manufacturing and R&D. Fremont's biotechnology/biomedical cluster provided over 5,000 jobs in 2008, a concentration above the State average. Despite reduction of employment resulting from closures during the recession and increasing competition from numerous cities in the Bay Area, the City has maintained a strong presence of firms in this cluster. One example of firms with significant employment and/or high levels of venture capital funding is Zosano.

- **Clean Technology**. This cluster is loosely defined as including a diversity of sectors related to energy efficiency, alternative energy, and "greener" business practices and/or technologies. The Bay Area is already an important leader in this emerging new cluster. Fremont has recently captured clean tech firms, particularly those engaged in activities around solar energy. In 2007, Solyndra, a thin-film solar manufacturer, moved to Fremont, as did Solaria, a solar R&D operation with significant venture capital backing. More recently, Tesla announced that it plans to manufacture a new electric car at the NUMMI site. This cluster has significant potential for growth in Fremont.

For areas in Fremont outside of the core industrial areas, health services and professional services offer the strongest growth prospects. These clusters represent driving industries that have an existing presence and have shown strong recent growth. They typically associate with high-paying jobs and will likely result in additional space needs for office and medical office space in the City. Descriptions for these industries are provided below:

- **Health Services**. Fremont's health services cluster includes direct patient care establishments such as hospitals, doctor and dentist offices, outpatient services, and home health care. The majority of these establishments in Fremont are situated in the City Center, around the BART station. There were nearly 10,000 health-related jobs in Fremont in 2007

Table 18
Subarea Specialization District Quotient
South Fremont/Warm Springs Area Study; EPS#20050

Item	Ardenwood	Baylands	Warm Springs	Downtown CBD	Other Districts (1)
Biotechnology/Biomedical	2.49	1.96	0.48	0.13	0.36
Clean Technology	na	0.57	2.09	na	0.06
Computer and Communications Manufacturing	1.89	1.17	1.29	na	0.10
Distribution & Logistics	0.56	1.83	0.78	0.02	0.92
Diversified Industrial Support	0.00	0.34	2.17	0.04	0.28
Health Services	0.12	0.02	0.03	5.71	2.66
Professional Services	0.49	0.31	0.36	2.90	3.08
Software and Communications Technology	0.35	1.17	0.84	0.32	1.99

Note: Location quotient (LQ) indicates cluster concentration by subarea. A location quotient greater than 1 indicates a specialization above the city average.

(1) Include Irvington, Mission San Jose, and Niles.

Sources: ICF International; Economic & Planning Systems, Inc.

with the most notable tenants including Washington Hospital, Kaiser Permanente, and Palo Alto Medical Center. These facilities have historically contributed to spillover demand for complimentary healthcare services, such as smaller private practices, testing labs, and specialized treatment facilities. The health services industry is one of the least cyclically vulnerable and is likely to continue expanding in Fremont.

- **Professional Services.** This cluster includes financial, scientific, and technical services, such as investment and real estate brokerages, accounting and engineering firms, and management and legal services. This cluster exhibited the highest rate of growth during the last decade. Most of the employment in this industry sector is made up by small companies with corporate headquarters in Fremont limited. The largest share of employment exists in real estate, followed by credit intermediation, and architectural and engineering services with Fremont Bank and Greenstein, Rogoff, Olsen & Company as the most notable tenants. This cluster is likely to continue its growth in the foreseeable future.

Real Estate Context

This section provides the current regional office/industrial real estate context followed by the City's real estate profile. The existing stock of real estate provides an indication of the manner in which development in the region and the City has responded to job growth in the past. Current market indicators provide a sense of the potential for existing real estate to accommodate new growth as well as the current performance of different types of workspace-accommodating real estate.

Regional Real Estate Profile

Interstate 80/880 Corridor

Workspace along the I-80/880 Corridor has developed in response to economic growth. The corridor currently includes 224 million square feet of non-retail workspace. Following a period of economic contraction during the early part of the decade, workspace real estate trends have improved in the I-80/880 Corridor, as well as in the City of Fremont, but have weakened after the 2007-2008 period. The large existing inventory of vacant space and the low lease rates have limited new construction during the last five years.

Office

There are approximately 29 million square feet of office space on the I-80/880 Corridor. This represents about 13 percent of the non-retail workspace along the Corridor (see **Table 19**). The majority of this office space is located in Oakland. Driven by the technology-based economic expansion and associated job growth of the late 1990s, approximately 1 million square feet of office development occurred in the I-80/880 Corridor over the last decade. The I-80/880 Corridor office market is significantly smaller than that of Silicon Valley, which has 3.6 times more office space.

Table 19
Bay Area Workspace Allocation (Q2 2010)
South Fremont/Warm Springs Area Study; EPS#20050

Market	Office sq.ft.	R&D sq.ft.	Warehouse sq.ft.	Manufacturing sq.ft.	Total sq.ft.
East Bay 80/880 Corridor	29,267,467	32,155,949	75,702,083	87,006,681	224,132,180
Distribution	13%	14%	34%	39%	100%
San Mateo County	*31,660,704*	*18,500,439*	*26,445,953*	*40,025,892*	*116,632,988*
Santa Clara County	*72,431,169*	*131,582,924*	*32,644,897*	*53,302,302*	*289,961,292*
Silicon Valley Total	104,091,873	150,083,363	59,090,850	93,328,194	406,594,280
Distribution	26%	37%	15%	23%	100%
Fremont	2,398,872	20,361,707	8,026,308	9,565,229	40,352,116
Distribution	6%	50%	20%	24%	100%
Fremont as % of 80/880 Corridor	8%	63%	11%	11%	18%
Fremont as % of Silicon Valley	2%	14%	14%	10%	10%

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

Sources: NAI BT Commercial; Economic & Planning Systems, Inc.

The I-80/880 Corridor has historically maintained higher vacancies and lower lease rates compared to Silicon Valley. During the peak of the market in 2000, the average lease rate per square foot reached $3.33, a 120 percent increase over a five-year period with the vacancy rate at 5.5 percent. The equivalent lease rates for Silicon Valley were $6.54 with a vacancy rate of 3.5 percent (see **Table 20**).

As job growth came to an abrupt end, so did plans for office development. Negative net absorption[5] during 2001 and 2002 resulted in increased vacancies and downward pressure on lease rates. By 2004, rents had fallen back to $1.82 per square foot with vacancy at 16.8 percent. The I-80/880 Corridor market has been slowly recovering since 2004 with rents increasing to $2.39 per square foot and vacancies at 16.3 percent by 2008 (see **Table 20**).

However, office conditions have weakened since associated with the Great Recession, with Q2 2010 rents reducing to $2.16 per square foot and vacancies increasing to 17.7 percent. The total vacant office space along the Corridor is 5.2 million square feet as of mid-2010 (see **Table 21).**

Research and Development (R&D)

There are approximately 32 million square feet of R&D space on the I-80/880 Corridor, with over 60 percent of this space or 20 million square feet located in Fremont (see **Table 19**). For this discussion, "R&D" space includes traditional research and development facilities featuring wet or dry labs and "heavy office" facilities that include exceptional power, cooling, and flooring to accommodate massive computer systems. It also includes R&D Flex space that may include traditional office and/or manufacturing space within the same building.

Driven by the technology-based economic expansion and employment growth of the late 1990s, the I-80/880 Corridor's R&D market experienced strong growth. The greatest absolute increase in supply occurred in 1999 and 2000, with negligible new construction since 2001.

Consistent with the broader Bay Area trend, though less so than other workspace categories, the R&D market has shown signs of improvement through rent appreciation with rents reaching $1.12 per square foot by 2008. However, rents have decreased since with Q2 2010 rents at $0.89 per square foot. It is worth mentioning that R&D vacancies have been relatively stable, ranging between 20 and 24 percent (see **Table 22**). Such high vacancies suggest that the R&D market has been oversupplied with space inventory that has not been fully utilized over the last decade.

A portion of R&D development is partially attributed to the interest of smaller firms in the software, bioscience, and innovation services sectors in the affordable workspace available. Broker interviews indicate that demand is the strongest for smaller R&D spaces in Fremont and elsewhere in Silicon Valley. This notion is supported by the recent office flex/R&D condo trend attributed to smaller firms looking for affordable workspace and ownership opportunities.

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[5] Change in occupied building square footage in a given time period.

Table 20
Office Lease and Vacancy Rates 1995-2010
South Fremont/Warm Springs Area Study; EPS#20050

Market	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Q2 2010
East Bay 80/880 Corridor																
Average Annual Lease Rate	$1.51	$1.56	$1.64	$1.80	$1.96	$3.33	$2.46	$1.93	$1.84	$1.82	$1.91	$2.08	$2.26	$2.39	$2.14	$2.16
Average Annual Vacancy	10.9%	10.7%	7.5%	7.3%	4.8%	5.5%	13.8%	17.7%	17.0%	16.8%	15.1%	13.8%	14.0%	16.3%	17.7%	17.7%
Silicon Valley																
Average Annual Lease Rate (1)	$2.10	$2.24	$2.79	$3.02	$3.47	$6.54	$3.23	$2.55	$2.16	$2.09	$2.13	$2.36	$2.76	$3.07	$2.65	$2.59
Average Annual Vacancy	5.6%	3.9%	3.0%	7.5%	3.5%	3.5%	13.1%	16.1%	17.5%	14.0%	12.1%	11.0%	10.5%	17.1%	19.1%	18.2%
Fremont																
Average Annual Lease Rate	$1.20	$1.40	$1.70	$1.90	$2.00	$4.00	$2.70	$2.20	$1.98	$1.97	$2.16	$2.25	$2.20	$2.21	$2.29	$2.11
Average Annual Vacancy	1.8%	8.3%	3.0%	5.4%	8.7%	2.9%	6.1%	8.5%	6.9%	7.0%	5.5%	6.3%	8.5%	10.8%	13.8%	14.1%

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

(1) Due to the lack of data available for the Silicon Valley area, the average between San Mateo and Santa Clara Counties is applied between 1995 and 1999.

Sources: NAI BT Commercial; Economic & Planning Systems, Inc.

Table 21
Bay Area Vacant Workspace Allocation (Q2 2010)
South Fremont/Warm Springs Area Study; EPS#20050

Market	Vacant Square Footage				
	Office	R&D	Warehouse	Manufacturing	Total
East Bay 80/880 Corridor	5,173,910	7,272,419	8,357,324	6,365,817	27,169,470
Distribution	19%	27%	31%	23%	100%
Silicon Valley	18,701,003	26,069,430	6,133,208	8,090,953	58,994,594
Distribution	32%	44%	10%	14%	100%
Fremont	338,545	4,545,900	624,393	484,347	5,993,185
Distribution	6%	76%	10%	8%	100%
Fremont as % of 80/880 Corridor	7%	63%	7%	8%	22%
Fremont as % of Silicon Valley	2%	17%	10%	6%	10%

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

Sources: NAI BT Commercial; Economic & Planning Systems, Inc.

Table 22
I-80/880 Corridor Industrial Market Lease and Vacancy Rates, 2004 - 2010
South Fremont/Warm Springs Area Study; EPS#20050

Item	2004	2005	2006	2007	2008	2009	Q2 2010
R&D							
Average Annual Lease Rate (NNN)	$0.84	$0.84	$0.91	$1.07	$1.12	$0.92	$0.89
Average Annual Vacancy	20.2%	22.0%	23.4%	22.2%	21.0%	22.8%	22.6%
Warehouse							
Average Annual Lease Rate (NNN)	$0.35	$0.39	$0.43	$0.47	$0.45	$0.40	$0.38
Average Annual Vacancy	8.2%	6.6%	4.4%	5.2%	7.9%	10.9%	11.0%
Manufacturing							
Average Annual Lease Rate (NNN)	$0.45	$0.51	$0.55	$0.58	$0.55	$0.47	$0.44
Average Annual Vacancy	5.5%	5.1%	5.6%	5.0%	6.2%	6.9%	7.3%

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

Sources: NAI BT Commercial; Economic & Planning Systems, Inc.

Warehouse and Manufacturing

Warehouse and manufacturing categories include heavier industrial uses relative to R&D. Both of these categories generally feature open floor plans, high ceilings, and roll-up doors for loading and unloading freight. Warehouse space is typically used for storage and is characterized by docks or grade doors, minimal tenant improvements, and limited glass. Manufacturing space is used for production purposes with structures typically including three sides of concrete and one side of glass and limited tenant improvements.

There are approximately 76 million square feet of warehouse and 87 million square feet of manufacturing in the I-80/880 Corridor. These markets respectively account for 34 and 39 percent of the Corridor's non-retail workspace inventory, a strong indication of the County's historical focus on heavy industry and distribution (see **Table 19**).

As is typical, warehouse and manufacturing workspace along the I-80/880 Corridor generates lower rents than office and R&D. Vacancy rates have also been consistently lower than R&D vacancy rates, with the economic downturn weakening market conditions in both of these workspace types. Average warehouse and manufacturing rents were $0.38 and $0.44 per square foot by Q2, 2010 with vacancies at 11.0 and 7.3 percent, respectively (see **Table 22**).

Silicon Valley

Silicon Valley is one of the largest employment centers in the Bay Area and the State, accounting for over 1.2 million jobs and nearly 407 million square feet of non-retail workspace, including 104 million square feet of office, 150 million square feet of R&D space, and 152 million square feet of warehouse and manufacturing space (see **Table 19**). Silicon Valley is the Bay Area's largest R&D market, with the majority of the R&D building space in Santa Clara County. Silicon Valley's workspace exceeds that of the I-80/880 Corridor by over 80 percent, with significantly more office, R&D and manufacturing space, although it has less warehouse space.

Similar to the I-80/880 Corridor, Silicon Valley workspace has exhibited gradual improvement since 2004 with a decline after 2008. Even though rents have not justified significant new construction since 2005,[6] the overall market indicators have displayed improvement with rents and vacancy improving among all uses after 2004. However, the trends reversed in 2008, with rents decreasing and vacancies increasing (see **Table 23**). Market indicators in Silicon Valley's office, R&D and manufacturing uses have historically been stronger relative to the I-80/880 Corridor, though vacancy rates of manufacturing space in Silicon Valley are still above those in the I-80/880 Corridor.

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[6] New construction often occurs as existing rents rise above the threshold sufficient to cover construction costs and associated minimum return on investment. Development pressure reflects increasing rents.

Table 23
Silicon Valley Lease and Vacancy Rates, 2000 - 2010
South Fremont/Warm Springs Area Study; EPS#20050

Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Q2 2010
R&D											
Average Annual Lease Rate (NNN)	$4.10	$1.50	$1.10	$0.87	$0.75	$0.83	$0.99	$1.26	$1.26	$1.03	$0.99
Average Annual Vacancy	4.0%	17.3%	22.3%	24.7%	24.0%	22.5%	18.3%	16.6%	16.3%	19.3%	19.1%
Warehouse											
Average Annual Lease Rate (NNN)	$0.77	$0.64	$0.37	$0.38	$0.38	$0.40	$0.42	$0.50	$0.50	$0.43	$0.43
Average Annual Vacancy	4.4%	12.6%	16.7%	18.1%	15.3%	11.0%	7.4%	5.4%	6.0%	8.1%	8.8%
Manufacturing											
Average Annual Lease Rate (NNN)	$1.57	$1.15	$0.85	$0.55	$0.60	$0.66	$0.68	$0.78	$0.75	$0.62	$0.61
Average Annual Vacancy	3.9%	10.1%	11.3%	11.7%	10.5%	9.8%	8.0%	5.8%	6.4%	7.9%	7.9%

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

Source: NAI BT Commercial; Colliers International; Economic & Planning Systems, Inc.

Fremont's Real Estate Profile

Workspace Market Trends

The City of Fremont has 40 million square feet of non-retail workspace, accounting for 18 percent of the I-80/880 Corridor total. Various workspace clusters are scattered through the City. Irvington, Niles, and Mission San Jose business districts support primarily retail and smaller office spaces. The more retail-oriented business districts also include some low-rise office buildings with smaller spaces accommodating healthcare, financial services, and real estate personnel tenants. The City Center and Centerville also include retail development, though with larger office clusters. The Ardenwood, Baylands and Warm Springs are three of the City's major workspace districts. They include the large majority of industrially zoned land, including warehouse, manufacturing, and R&D Flex space as well as some one- and two-story office campus developments.

During the late 1990s, as the Bay Area economy expanded rapidly, the City of Fremont's competitive advantage was based on its proximity to Silicon Valley and its relative affordability. As a result, firms located R&D, production, and assembly functions in Fremont. Significant new R&D development occurred during this period. At the same time, the City experienced relatively limited office development. Fremont's office and industrial segment trends are described below and are summarized in **Table 24**.

Office

The City currently has a total of about 2.4 million leasable square feet of office space tracked by major brokerage firms, representing about 6 percent of the City's non-retail workspace (see **Table 19**). Much of this space is located in the City Center and Centerville. This space primarily consists of office buildings occupied by financial, real estate and health-related services. These services have historically located in the City Center. Additional office and medical office space in smaller office buildings is disbursed throughout the City's business and commercial centers with increasing amounts of office uses locating in the lower cost industrial areas in recent years.

The City's office space has historically commanded lower lease rates and vacancy rates compared to the Silicon Valley average. Office vacancies in Fremont have been in the single digits for at least 13 years because 1995 and 2007, in part because of the limited supply. However, vacancies have increased to double digits as of 2009 reaching 14.1 percent by mid-2010.

There are approximately 339,000 square feet of available office space in larger office buildings in Fremont. Similar to the broader regional trends, Fremont's office market peaked in 2000 with an average lease rate of $4.00 per square foot and a vacancy rate of 2.9 percent and bottomed out in 2003 with an average lease rate of $1.98 per square foot and a vacancy rate of 6.9 percent; it has since increased again to $2.25 per square foot and 6.3 percent vacancies and has softened to rents of $2.11 per square foot by Q2 2010 (see **Table 24**).

Table 24
Fremont Real Estate Summary, 2004 - 2010
South Fremont/Warm Springs Area Study; EPS#20050

Item	2004	2005	2006	2007	2008	2009	Q2 2010
Office							
Tracked Inventory (sq.ft.)	n/a	2,170,160	2,317,854	2,317,854	2,341,402	2,382,912	2,398,872
Average Annual Lease Rate (NNN)	$1.97	$2.16	$2.25	$2.20	$2.21	$2.29	$2.11
Average Annual Vacancy	7.0%	5.5%	6.3%	8.5%	10.8%	13.8%	14.1%
Net Absorption	n/a	n/a	n/a	n/a	n/a	n/a	n/a
New Construction	n/a	n/a	n/a	n/a	n/a	n/a	n/a
R&D							
Tracked Inventory (sq.ft.)	n/a	20,490,566	20,658,376	20,997,228	21,179,410	20,871,582	20,361,707
Average Annual Lease Rate (NNN)	n/a	$0.82	$0.86	$0.93	$1.04	$0.87	$0.82
Average Annual Vacancy	21.3%	21.5%	22.1%	21.2%	20.7%	23.9%	22.3%
Net Absorption	475,327	(67,993)	(212,356)	468,590	(57,957)	(602,915)	372,051
New Construction	0	69,372	0	0	220,542	0	0
Warehouse							
Tracked Inventory (sq.ft.)	n/a	8,003,447	8,301,772	8,306,295	8,011,039	8,039,143	8,026,308
Average Annual Lease Rate (NNN)	n/a	$0.43	$0.43	$0.48	$0.51	$0.46	$0.43
Average Annual Vacancy	13.7%	11.1%	9.0%	7.4%	5.6%	6.1%	7.8%
Net Absorption	615,680	175,499	190,404	118,628	167,970	(15,910)	(162,005)
New Construction	0	0	0	0	0	0	0
Manufacturing							
Tracked Inventory (sq.ft.)	n/a	9,154,017	9,011,782	8,974,095	9,236,349	9,522,625	9,565,229
Average Annual Lease Rate (NNN)	n/a	$0.55	$0.61	$0.67	$0.69	$0.62	$0.57
Average Annual Vacancy	9.2%	8.1%	8.2%	3.4%	5.6%	5.2%	5.1%
Net Absorption	59,838	115,571	28,584	277,059	(173,054)	392,629	1,425
New Construction	0	0	0	24,643	0	338,000	0

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

Sources: NAI BT Commercial; Economic & Planning Systems, Inc.

R&D

The City of Fremont accounts for a significant proportion of the regional R&D inventory, comprising 63 percent of the I/80-880 Corridor and 14 percent of the Silicon Valley totals. The City's 20 million square feet of leasable R&D space exceed its office, warehouse, and manufacturing space combined. The majority of this space is located in the Ardenwood, Baylands, and Warm Springs Business Districts. The space primarily consists of one- to three-story buildings in business parks, occupied by various tenants, including many in the life science and information technology industries.

Over 20 percent of the R&D space has been left vacant since the market downturn of 2001 with vacancy rates fluctuating between 20 and 24 percent between 2001 and 2010. Fremont's R&D market has only posted positive absorption in 2004 and 2007, although mid-2010 absorption has also been positive. An average net absorption in Fremont over the last 10 years was negative 300,000 square feet (see **Table 25**). Lease rates have been declining since 2008 to $0.82 per square foot by Q2 2010, while vacancies have been increasing (see **Table 26**). Fremont's R&D component has historically had the highest vacancies compared to the other commercial uses and currently accounts for 4.5 million square feet of vacant space (see **Table 21**).

Warehouse and Manufacturing

There are 8.0 million square feet of warehouse space and 9.6 million square feet of manufacturing space in the City of Fremont, significantly less than its R&D inventory. Fremont's warehouse and manufacturing spaces account for 11 percent each of the corridor total. The market's downturn in 2008 resulted in increasing vacancy rates and decreasing lease rates between 2008 and 2010. Vacancies remained in single figures in the warehouse and manufacturing sector in mid-2010, at 7.8 and 5.1 percent respectively, indicating greater stability in these sectors than in the R&D sector (see **Tables 25** and **26**).

Employment Growth and Space Needs

This section describes job projections for the City of Fremont through 2035. It also translates these projections into an estimate of future workspace need. These space needs are compared with the City's industrial and office building space vacancies and additional land development capacity in subsequent sections.

Regional Projections

ABAG provides countywide and citywide policy-based projections for San Francisco Bay Area jurisdictions. The ABAG Projections documents, published every two years, provide the latest summary of ABAG's population, household, and jobs projections. ABAG's employment projections include full- and part-time jobs by place of work. Employment estimates include wage, salary, and self-employed workers, with job sectors defined using classifications from the North American Industrial Classification System (NAICS).

The I-80/880 Corridor economy is forecasted to expand from about 531,000 to 758,000 jobs over the next 25 years according to the ABAG Projections 2009 forecast. This represents an increase of about 43 percent or roughly 228,000 new jobs. Similar to the Fremont trend, the largest growth in jobs is expected to occur in service jobs, including health, education,

Table 25
Industrial Net Absorption and New Construction Trends (sq.ft.), 2001-2010
South Fremont/Warm Springs Area Study; EPS#20050

Item	2001	2002	2003	2004	2005	2006	2007	2008	2009	Q2 2010
R&D										
Net Absorption										
I-80/880 Corridor	(2,277,646)	(1,688,470)	(136,956)	344,016	(414,945)	(724,158)	714,540	184,416	(443,981)	29,558
Silicon Valley	(14,802,802)	(8,947,842)	(2,434,919)	780,024	3,760,935	2,075,021	2,746,128	861,176	(4,967,025)	145,213
Fremont	(1,845,854)	(1,448,615)	(23,377)	475,327	(67,993)	(212,356)	468,590	(57,957)	(602,915)	372,051
New Construction										
I-80/880 Corridor	680,428	474,831	47,310	12,070	97,908	0	245,000	220,542	0	0
Silicon Valley	2,289,881	625,522	0	228,199	421,710	0	0	578,562	0	0
Fremont	145,474	434,984	0	0	69,372	0	0	220,542	0	0
Warehouse										
Net Absorption										
I-80/880 Corridor	(4,355,436)	572,784	(2,082,027)	2,334,348	1,323,859	1,565,339	(984,929)	(985,575)	(2,097,495)	(630,050)
Silicon Valley	(2,819,301)	(404,112)	(1,003,275)	(139,006)	1,468,011	1,117,037	780,785	(230,775)	(757,683)	(432,433)
Fremont	(527,770)	(542,495)	(511,454)	615,680	175,499	190,404	118,628	167,970	(15,910)	(162,005)
New Construction										
I-80/880 Corridor	843,808	65,000	68,400	0	0	0	107,000	40,000	122,000	0
Silicon Valley	708,223	0	0	0	0	0	0	0	0	0
Fremont	70,552	0	0	0	0	0	0	0	0	0
Manufacturing										
Net Absorption										
I-80/880 Corridor	(1,003,226)	(1,359,864)	(145,450)	574,765	604,247	(429,497)	(984,929)	(985,575)	(2,097,495)	(630,050)
Silicon Valley	(3,253,108)	(616,743)	217,025	979,039	263,453	413,608	(99,038)	(778,027)	(598,660)	(44,483)
Fremont	(283,207)	(595,032)	325,968	59,838	115,571	28,584	277,059	(173,054)	392,629	1,425
New Construction										
I-80/880 Corridor	1,243,872	148,511	186,272	145,477	173,211	600,800	107,000	40,000	122,000	0
Silicon Valley	193,718	42,387	42,095	0	73,343	0	24,643	0	338,000	0
Fremont	41,000	22,300	42,095	0	0	0	24,643	0	338,000	0

Notes: NAI BT Commercial merged with Cassidy Turley at the beginning of 2010. Cassidy Turley BT maintains a historical building records; however, comparison of previous reports to those after the merger may show different statistics due to reclassification of buildings and revised building sizes.

Sources: NAI BT Commercial; Economic & Planning Systems, Inc.